

Applic. No.: 09/917,549

Amdt. Dated August 5, 2004

Reply to Office action of May 5, 2004

Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of claims:

Claim 1 (currently amended): ~~A process for~~ An anisotropically dry etching process of an organic antireflection layer on a semiconductor layer, which comprises:

providing an organic antireflection layer on a semiconductor layer, the semiconductor layer being made of silicon dioxide;

etching the organic antireflection layer with an etching gas composition containing at least 80% hydrogen and nitrogen; and

achieving a selectivity of more than 1:50 of the organic antireflection layer etching in relation to etching the semiconductor layer lying underneath the organic antireflection layer.

Claim 2 (original): The process according to claim 1, which comprises etching the organic antireflection layer with an etching gas composition consisting essentially of hydrogen and nitrogen.

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Claim 3 (original): The process according to claim 1, which comprises using hydrogen and nitrogen in a ratio of 1:1.

Claim 4 (cancelled).

Claim 5 (original): The process according to claim 4, wherein the etching gas composition contains, as reactive etching gases, only hydrogen and nitrogen.

Claim 6 (previously presented): The process according to claim 1, wherein the etching gas composition contains additives for improving one of etching gas properties including selectivity, structure accuracy and compatibility with subsequent etching processes in the dry etching process.

Claim 7 (previously presented): The process according to claim 1, which comprises using a photoresist layer as an etching mask for the organic antireflection layer, and setting the etching gas composition for causing a vertical removal of the photoresist at most corresponding to an etching rate of the organic antireflection layer.

Claim 8 (previously presented): The process according to claim 1, which comprises setting the following process parameters

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for the reactive ion etching of the organic antireflection layer:

pressure of the etching gases in a range between 2.67 and 26.67 Pa; and

flow of the etching gases in a range between $0.17 \cdot 10^{-6}$ and $1.67 \cdot 10^{-6} \text{ m}^3 \text{ sec}^{-1}$.

Claim 9 (previously presented): The process according to claim 8, which comprises exposing an etching object to a magnetic field strength from above 0 to 120 Gauss and processing the object with magnetic field-assisted reactive ion etching.

Claim 10 (previously presented): The process according to claim 1, which comprises etching the organic antireflection layer with a plasma from a source selected from the group consisting of an electron cyclone resonance plasma source, an inductively coupled plasma, and a Helicon source.